DOCUMENT RESUME

ED 473 130 IR 021 663

TITLE	The Top-Awarded Reports: The First Contest of Internet Application to Educational Activities in Japan. AVE in Japan.
INSTITUTION	Japan Audiovisual Information Center for International Service, Tokyo.; Japan Audio-Visual Education Association, Tokyo.
REPORT NO	AVE-40
PUB DATE	2002-00-00
NOTE	36p.
AVAILABLE FROM	Japan Audio-Visual Education Association, 1-17-1 Toranomon, Minato-ku, Tokyo, 105-0001, Japan (1,000 yen). Tel: 81-3-3591-2186/7; Fax: 81-3-3597-0564; Web site: http://www.javea.or.jp.
PUB TYPE	Collected Works - General (020)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	*Awards; *Computer Mediated Communication; *Educational Technology; Elementary Secondary Education; Foreign Countries; Insects; *Internet; Swimming Pools; *Technology Uses in Education
IDENTIFIERS	*Web Sites; Aquatic Organisms; Japan; Japan Audiovisual Education Association

ABSTRACT

This booklet presents two activities that received awards in the First Contest of Internet Application to Educational Activities in Japan. The first paper describes CHaTNet (Children Homes and Teachers Network) at the Tamagawa Gakuen school, winner of the Prime Minister's Award. CHaTNet is a network of 4,500 participants, including parents, students in grades 4-12, and faculty members. It is developing into a community crossing departmental boundaries in providing information on everyday education activities and acting as a forum for the collection of information and the exchange of ideas. The second paper describes the development of the "Yago-kyu" (dragonfly larvae saving) Net Project at Keio Yochisha Elementary School, winner of the Minister for Education, Culture, Sports, Science and Technology Award. In this project, 38 schools and groups nationwide made an investigation of the aquatic insects living in school swimming pools, and the "Yago-kyu" Net Project World Wide Web page was opened as a site for these activities. This Web page presents a simple way to carry out an investigation and view the data, and it provides a place where the organizations can communicate with each other. (MES)

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The Top-Awarded Reports:

The First Contest of Internet Application to Educational Activities in Japan

ED 473 130

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The First Contest of Internet Application to Educational Activities in Japan

Japan Audio-visual Information Center
for International Service
Japan Audio-visual Education Association

Published in 2002 by the
Japan Audio-visual Education Association
1-17-1 Toranomon, Minato-ku, Tokyo, 105-0001, Japan

JAVIC 2002
Printed in Japan

FOREWORD

The First Contest of Internet Application to Educational Activities in Japan was held under the auspices of the Ministry of Education, Culture, Sports, Science and Technology and the Contest of Internet Application to Educational Activities Organizing Committee. The aim of the contest was to reward innovative and versatile educators in the field of school education and social education, which are using the Internet in effective, integrative ways, as a source of receiving, sending and exchanging information to improve learning.

79 entries in school education and 12 in social education applied for the contest. After preliminary screening of the application documents, the final decision was made on February 9th, 2001, by examining videotaped reports. In consequence, the Prime Minister's Award, the Minister for Education, Culture, Sports, Science and Technology Award, the Minister of Public Management, Home Affairs, Posts and Telecommunications Award, the Minister of Economy, Trade and Industry Award, the Asahi Newspaper Company Award, and the five for Contest of Internet Application to Educational Activities Organizing Committee Award were selected. The awards ceremony and presentation was held on February 28th, 2001 in Tokyo.

This booklet introduces two activities: Tamagawa Gakuen which received the Prime Minister's Award, and Keio Yochisha Elementary School which received the Minister for Education, Culture, Sports, Science and Technology Award.

(Links to the web pages are posted on http://www.netcon.gr.jp/)

March 2002

Keijiro Inai

President, Japan Audio-visual Education Association

Contents

I CHaTNet (Children Homes and Teachers Network) ····· **4**

1. Aim of the Activities ····· 5
2. Special Features / Methods / Points of Emphasis ····· 5
3. Contents of the Activities ····· 7
4. Results of the Activities ····· 8
5. Prospects (Future Topics) ····· 16

II Aquatic Insects Living in the School Swimming Pool:Development of the *"Yago-kyu"* (dragonfly larvae saving) *Net Project* ····· **18**

1. Aims of the Activity ····· 19
2. Special Features, Methods, Points of Emphasis ····· 21
3. Contents of the Activities ····· 26
4. Results of the Activities ····· 27
5. Prospects (Future Topics) ····· 30

CHaTNet (Children Homes and Teachers Network)

The Prime Minister's Award

Tamagawa Gakuen

Data

Address:
Tamagawa Gakuen,
Tamagawa Gakuen 6-1-1,
Machida-shi,
Tokyo 194-8610
URL: http://www.tamagawa.ed.jp/chatnet/

Summary

At Tamagawa Gakuen, in order to embody the Tamagawa education policies* in a form that is directed towards the twenty-first century, we have started the network community 'CHaTNet' which involves parents, children and teachers in a 'trinity' network. It is comprised of parents, children and students from 4th to 12th grade, and all faculty members and staff, making a grand total of 4,500 participants. It is developing into a community crossing departmental boundaries in providing information on everyday education activities, and acting as a forum for the collection of information and the exchange of ideas.

* Founded in 1929 in the suburbs of Tokyo by Mr. Kuniyoshi Obara. Aiming at nurturing 'pure mind' 'clever head' 'strong body' . Affiliated with secondary and tertiary education system including the graduate course.

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1. Aim of the Activities

As an embodiment of the Tamagawa education policies ; "Trinity Education," "24-hour Education," "International Education" and "Highly Efficient Education," we started the network community "CHaTNet" in April 1998, via Internet.

The CHaTNet aims to be a place that:

- Informs the parents of what is going on at school.
- Children/pupils can announce what they learned at school.
- Children/pupils and parents can exchange information with each other.
- Facilitates communication among parents, children/pupils, and teachers.
- People can experience and learn the convenience and features of the network.
- Expands the possibilities of distance learning.

By using CHaTNet, we aim to move towards the following educational environment:

- To achieve the active involvement of parents in school education
- Divert from "Real Time and Real Place Education" to "Any Time and Any Place Education."

2. Special Features / Methods / Points of Emphasis

(1)Special Features

- Using the private servers for the four divisions : kindergarten, elementary school, lower and upper secondary school, and also those for the teaching staff, we formed a community that is adjusted to the children's' development stage. Each server is protected by an ID and a password, and the parents of children from kindergarten to upper secondary school participate in CHaTNet from home via an Internet service provider.
- The teachers' servers hold all the contents, and the faculty members and staff participate in the communities of all schools. Furthermore, a common conference room, which crosses all the schools, is provided. In this way, for example lower secondary school students may communicate with upper secondary school students, and the parents of K-12 age children may communicate with each other, and communication that crosses school barriers may be carried out.

- At present, on these four servers, around 4,500 people have registered as users, and every month more than 3000 people actually use the service. From the kindergarten level to the high school level, altogether more than 50% of homes are taking part. In particular, in kindergarten and elementary school nearly 80% of homes are taking part.
- Apart from the private servers, which are protected by an ID and password, in order to provide information on the current state of our school activities, we make active use of a web page. In particular, also in off-campus learning activities using mobile computing from the local site, we are transmitting information almost in real time. In this case, we are providing not only still pictures but also moving pictures and live relays over the Internet. According to the material transmitted and the purpose of transmission, we are using a variety of private servers and public servers (web pages) and are expanding our activities.

(2)Methods / Points of Emphasis

- We chose systems that can be used with both Macintosh and Windows, and which may work as well as possible with older computers, and which do not require a great amount of specialist knowledge about computers and networks for their maintenance.
- In order to promote the participation of parents, we are holding special courses aimed at parents in CHaTNet as the occasion demands. Especially from the end of March until April, we are concentrating these courses, aiming them at the parents of K-12 freshmen.
- We make a "CHaTNet Starter CD-ROM", which contains an introduction to CHaTNet as well as necessary software. Also, we produce a pamphlet every year introducing the activities of CHaTNet, which we distribute along with the CD-ROM.
- In order that the parents who are beginners in computing may also participate in an active way, we have opened a support centre for the purchase and installation of personal computers, in cooperation with an external company. Furthermore, in order to deepen communication between parents and the school, we have set up a service support desk by the teaching staff using telephone to encourage use of CHaTNet.

3. Contents of the Activities

(1)Providing information on educational activities

- Communicating everyday educational activities within school using still pictures and moving pictures.
- Communicating out-of-school educational activities such as off-campus learning in real time from the location.

(2)Announcing the results of children's and students' studies

- Announcing the results of study as well as independent research in each subject using CHaTNet.
- Exchanges with partner schools overseas using e-mail.

(3)Mutual exchange of information by children, students and parents

- The setting of various conference rooms with different objectives, for example a conference room where children and students from the elementary school up to the upper secondary school may communicate, a conference room where parents of K-12 age children may communicate, and a common conference room where technical questions may be raised.
- Active provision of information such as on school liaison plans for events, and the examination syllabus.

(4)Experiencing a convenience only available on a network

- Making contact about of students absences and online shopping from the purchasing department.
- Provision of a space where questions and queries may be freely aired and communication may be made with many people, crossing the usual boundaries of department and position.

(5)Raising the standard of communication between children / students, parents and teachers

- The encouragement of the active use of e-mail in situations where contact by telephone or direct communication may be difficult, for example from parents to teachers, and from students to teachers.

(6)Educational experiments that look towards the future, such as distance learning/learning from home

- As the arena of learning is not restricted to the classroom, even in situations when a teacher is on a domestic or foreign trip, still or moving pictures or episodes from the teacher's location used as teaching materials may be transmitted in real time using CHaTNet or a homepage using mobile computing.
- Promoting real-time communication from a distant place where one can see the face of the subject, and examining its use as a fundamental tool for distance learning.

4. Results of the Activities

(1)Providing information on educational activities

From K-12, each department is developing various activities. However, for the sake of example, we have mainly shown the results of the elementary school.

- The main activities using the web pages
  - The elementary school Sports-day (fig.1)

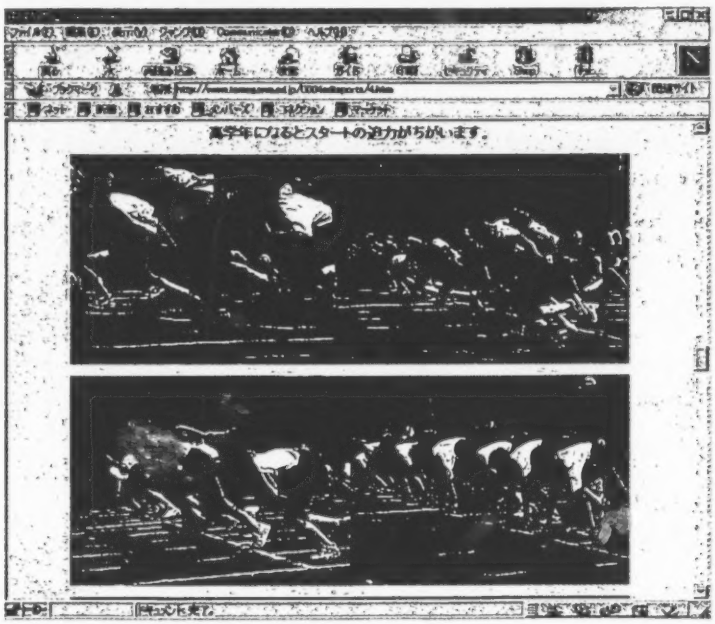

fig.1 The elementary school Sports-day
http://www.tamagawa.ed.jp/9904edtsports/
http://www.tamagawa.ed.jp/0004edtsports/

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At the elementary school Sports-day and the Sports Festival of Tamagawa Gakuen, we produce a web page based on materials taken when the event is in progress. When the children and students have returned home, they are able to view the whole thing. As a result of this, communication with their families increases, and even parents who were unable to take part in the event are able to enjoy the atmosphere of the occasion. There is also the benefit that parents working overseas can see the pictures.

・ Ski School (fig.2)

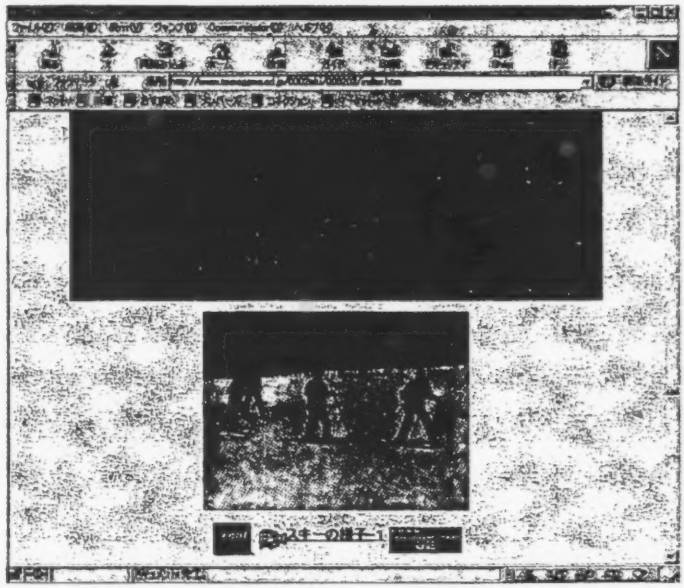

fig.2 Ski School
http://www.tamagawa.ed.jp/9902ski/
http://www.tamagawa,ed.jp/0002ski/

With the ski school and other school events where children stay away from home overnight, we transmit pictures of each day frequently (renewed around two to four times each day) on our web page and CHaTNet. Recently we have been making live relays using the Internet, and we are attempting to transmit the information as quickly as possible and in its live form. By giving the parents ready access to clear information about what the children are doing at the present moment, rather that having the children tell them about the event when they get back home, we can give them a sense of security.

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・Field trip to Kamakura (fig.3)

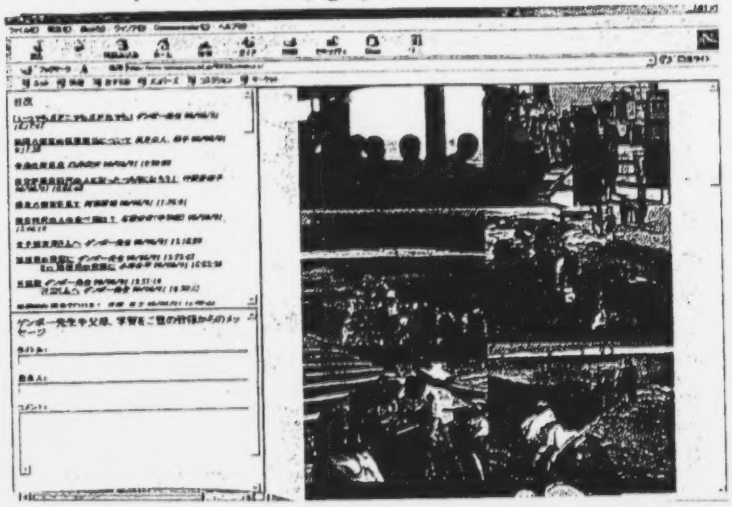

fig.3 Field trip to Kamakura
http://www.tamagawa.ed.jp/9906kamakura/s

On this social studies field trip, as well as the teaching staff reporting the situation of the children from the location, the children themselves gathered materials using digital cameras and notebook computers. The asked questions from the location over CHaTNet, and after returning to the school with materials that they had collected from the location on a certain topic, they put the materials together to make presentation materials, that they then presented. During this social studies field trip, they not only asked questions and queries to the teachers, but also used CHaTNet and homepages and gained information from various angles. Furthermore, by publicising these questions on the homepage, they were able to gain valuable comments from people outside the school, and also, because children and students from other schools asked additional questions, this homepage developed beyond the range of being a study tool internal to the school.

● Collaborations with CHaTNet (fig.4)

・The main school events from the kindergarten to the elementary school, are all placed on CHaTNet using still pictures. Also aspects of daily life are covered, with the teacher taking the lead role in using a digital camera to put still

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pictures online. Furthermore, children and students also collect materials themselves with a digital camera and put the still pictures on CHaTNet.

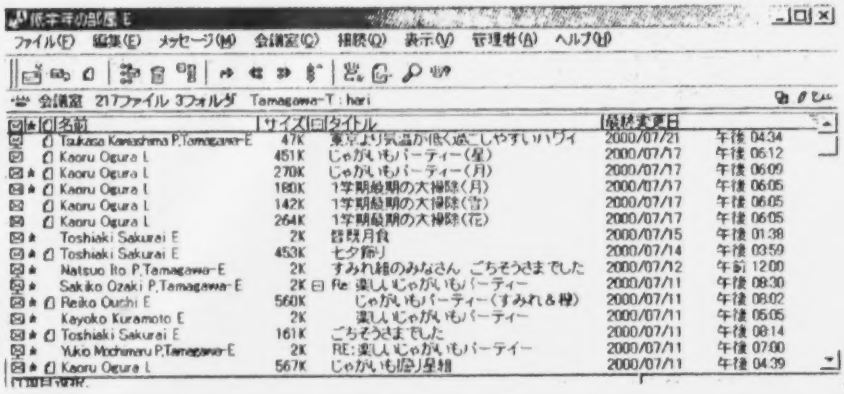
ファイル(F) 編集(E) メッセージ(M) 会議室(C) 検索(Q) 表示(V) 管理者(A) ヘルプ(H)
会議室 217ファイル 3フォルダ Tamagawa-T : hari
名前 サイズ タイトル 最終更新日
Takasa Kawashima P,Tamagawa-E 47K 東京より気温が低く過ごしやすいハワイ 2000/07/21 午後 04:34
Kaoru Ogura L 451K じゃがいもパーティー(星) 2000/07/17 午後 06:12
Kaoru Ogura L 270K じゃがいもパーティー(月) 2000/07/17 午後 06:09
Kaoru Ogura L 180K 1学期最期の大掃除(月) 2000/07/17 午後 06:05
Kaoru Ogura L 142K 1学期最期の大掃除(雪) 2000/07/17 午後 06:05
Kaoru Ogura L 264K 1学期最期の大掃除(花) 2000/07/17 午後 06:05
Toshiaki Sakurai E 2K 皆既月食 2000/07/15 午後 01:38
Toshiaki Sakurai E 453K 七夕飾り 2000/07/14 午後 03:59
Natsuo Ito P,Tamagawa-E 2K すみれ組のみなさん ごちそうさまでした 2000/07/12 午後 12:00
Sakiko Ozaki P,Tamagawa-E 2K Re:楽しいじゃがいもパーティー 2000/07/11 午後 09:30
Reiko Ouchi E 560K じゃがいもパーティー(すみれ&梓) 2000/07/11 午後 09:02
Kayoko Kuramoto E 2K 楽しいじゃがいもパーティー 2000/07/11 午後 05:05
Toshiaki Sakurai E 161K ごちそうさまでした 2000/07/11 午後 08:14
Yuko Michimaru P,Tamagawa-E 2K RE:楽しいじゃがいもパーティー 2000/07/11 午後 07:00
Kaoru Ogura L 567K じゃがいも掘り星組 2000/07/11 午後 04:39

fig.4 A room for junior students : messages with pictures attached are marked

・ The sixth graders record their Day-duty diary (fig.5)

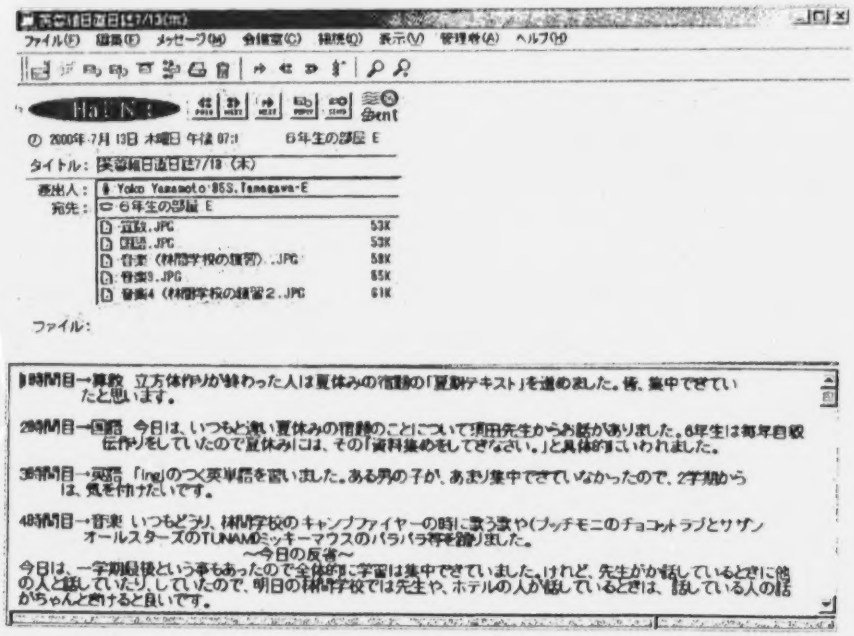

fig.5 Day-duty diary of sixth graders

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(2)Announcing the results of children's and students' study

- We are putting online using CHaTNet various things that the children and students have produced such as collections of haiku made in the Japanese lessons, completed presentation materials made during social studies lessons, etc. Furthermore, we are also putting online the comments concerning these works.
- We have put some collections of works online also on our homepage. For example, we have put online summer greeting cards by the third graders produced using computers with the intention that it can be seen by the children's grandparents.
  http://www.tamagawa.ed.jp/0007hagaki/
- As an example of a collaboration with our partner schools overseas, there is the "Our Trees Project." This project is centred upon environmental problems and international understanding, and we used the Internet to search for materials to further our study, and exchanged data between schools using e-mail. Furthermore, we used a homepage to announce the results of this project.
- In order to practice environmental education, where exchange of information is becoming very important, we are furthering preparations to use our homepages and CHaTNet.
  http://www.tamagawa.ed.jp/kankyo/

(3)Exchange of information by children/students and parents

- Children and students are asking questions and consulting using CHaTNet about their independent research projects, school life, and study, and are using the network to communicate reports and requests for support of their club activities and information about their performances etc. in a natural way.
- We are encouraging communication among the parents by providing conference rooms that are easy to use and fun for them, such as Bistro School (a conference room about cookery), a conference room on recycling, etc.
- Furthermore, communication not only among the children/students and among the parents, but also between the parents and the children/students is happening in an active way. For example, the lower secondary students ask questions concerning their language training in Canada to the upper secondary students, for which the older students replied based on their own experience, and students from the lower and upper secondary schools have responded to

questions about the way how to use CHaTNet before the teaching staff gives information. In this way communication may be made by the person who is able to provide the relevant information, regardless of age or position.

(4)Experiencing a convenience only available on a network

- Even just by using CHaTNet it is perfectly possible to experience a sort of convenience that could only be available on a network. However, apart from that, there is also the advantage of being able to communicate notification of absences, and online shopping that is provided by the purchasing department. Especially regarding the notification of absences, it is effective at times when it is difficult to put telephone calls through due to congestion, and means that notification of absences may be made simply by filling in the designated online form on CHaTNet. The homeroom teacher will confirm the notification of absences by looking at both notification by telephone and that made by CHaTNet, but by sending a mail over CHaTNet as a notification of absence, a reply to the enquiry about the pupil's health condition and follow-up to study becomes easier to activate.

(5)Raising the standard of communication between children/students, parents and teachers

- Things that the parents want to communicate with and consult the homeroom teachers about may be made not only by telephone or a face-to-face meeting, but also using the easier method of e-mail. In this way, we can reduce the distance between the parents and the school.
- In the same way, the children and students also may ask questions they were not able to raise in class, may air concerns or may discuss things easily by e-mail, and the distance between children/students and teachers has been reduced.
- In classes using the subject teacher-in-charge system, by following up classes and handing in assignments via CHaTNet, the children/students can hand in assignments from their own homes. This takes away the feeling of unease due absences from illness.

(6)Educational experiments that look towards the future, such as distance learning/learning from home

- What we are carrying out is not one-way education consisting of giving

lectures to geographically remote places, but rather an attempt centred around two-way communication, where we can see each other's faces, and make use of educational materials which are in the remote place.

- An example of education centred around educational materials in a remote place.

・Distance education between Australia-Tokyo (fig.6)

As an example of the usage of educational materials in a remote place, there is the distance education from Australia that was carried out in October 1999. This is a distance education from Australia that we carried out over 3 weeks on the subject of nature and the environment etc. which accompanied the participation of Tamagawa University in the October "World Solar Challenge," which is a solar car race. We made the material, based upon what was sent every day over the Internet into a web page, and tried carrying out a dialogue between the university students and our elementary school students on the same theme. Furthermore, we tried an experiment at the same time as the university students at the location, involving such things as "the shape of the moon," "the direction of shadows" and "the difference of the pattern on the surface of the moon." In response to the questions from Japan, images were sent from Australia on the next day or after, and so children and students were able to feel a new sense of nearness to Australia. We think that this is linked to international understanding.

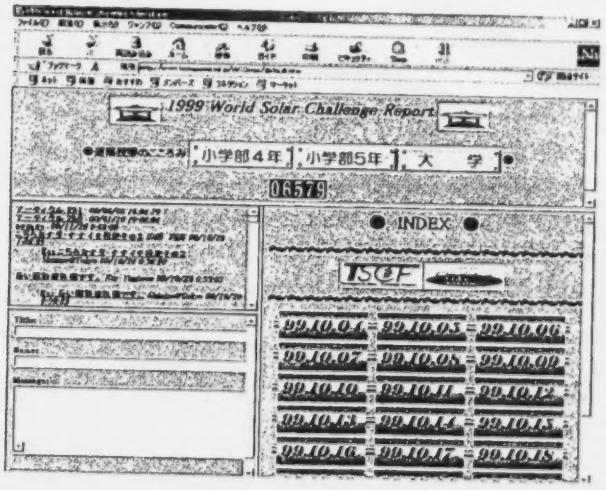

fig.6 The World Solar Challenge
http://www.tamagawa.ed.jp/9910wsc/

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● An example of distance education working in two directions

・Distance education between Canada-Tokyo (fig.7)

We tried an experiment from the grounds of a school in Nanaimo, Canada, which was in two-way communication using an image server and a hands-free telephone. We carried this out over the Internet, using a web page that transmits one frame of a camera image every few seconds, and an international telephone call, and creating in an easy way a similar environment to a TV conference. At present, for this set-up, we have switched over to a voice-over IC adapter that can send voices over the Internet, and in this case we do not need to use international telephone call. In this way, we can carry our business communications and the regular activation of the seminars of the Tamagawa University Agricultural Department using only the Internet. Furthermore, in the middle of the summer Canada language training programme of lower secondary school, this set-up was used for communication between the students in Canada and the parents in Japan. This also gave the advantage of letting the parents know the current state of the student's educational activities.

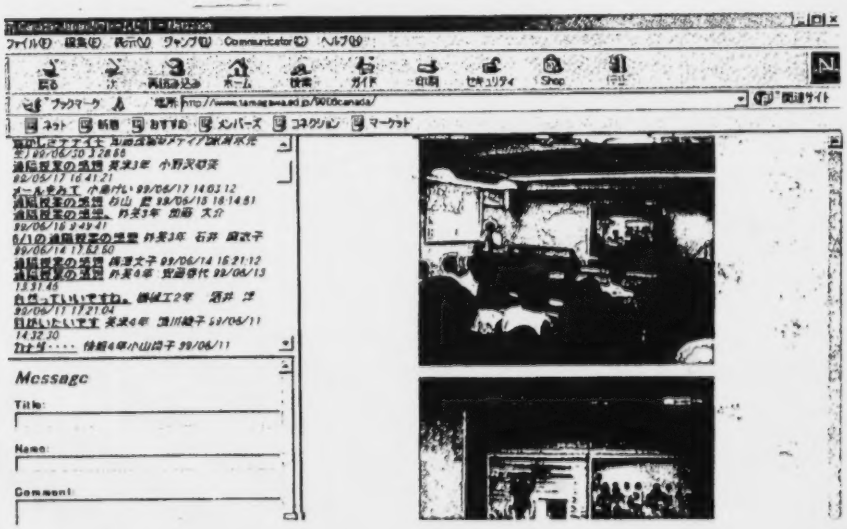

fig.7 The two-way communication linking Canada and our school
http://www.tamagawa.ed.jp/9906canada/

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- An example of simple two-way education where the partner's face is in view (fig.8)

Due to our belief that communication, wherever possible, should be carried out with the partner's face in view, and our wish to be able to talk to and to children overseas while seeing their faces, we have attached a CCD camera to a computer and carried out an experiment in communication. Bearing in mind the image of children and pupils talking to each other in the lunch-time break, looking at each other's faces without any trouble, we carried out an experiment in connecting up, involving our upper secondary school students and a school in Australia, where there is not such a big time-difference. We gained a good result from this experiment.

fig.8 Two-way communication where the partner's face is in view.

5. Prospects (Future Topics)

With CHaTNet, which started in April 1998, we have used the infrastructure of the Internet along with the best of current IT and have sought to achieve a new type of educational environment. In regard to the Internet, we have not stopped at using it for one-sided sending and gathering of information, but have placed our emphasis on making it a general-purpose tool of communication, especially a

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tool of two-way communication. Having spent two-and-a-half years following this course, we have a large network community that encompasses the whole of primary and secondary education (K-12), from kindergarten to high school.

By using this network community, we found the following substantial advantages:

- The participation in school education by parents
- The opening-up of the school (especially the publicising of educational activities, and communication with the teachers)
- The raising of computer literacy among children, students, teaching staff and parents.

Due to these advantages, it is thought that the relationship between the school and homes has become to change.

Because three years have passed since the start of CHaTNet, we have got through the process of new users being restricted to the people who enrol in the school from outside, and we think that we are about to enter a new phase of development. At present, a community has formed based around each school level, but actually each year the demands for inter-school communication increase. In response to this, in order to make the best of the benefits of having an integrated educational institution, we are seeking to produce a situation where there are absolutely no walls between departments, and anyone from any school may participate in any other school community within Tamagawa Gakuen. Furthermore, we are looking into the continuous education system, K-12, but we think that it is necessary to produce a network community that will be able to contribute towards the realisation of this.

Based on this long-term direction, based on the examination of tools that have utilised the Internet and IT technology up till now, we are henceforth entering a phase that will seek the enrichment of educational contents by a network (Internet). By the enrichment of the contents of education, we can see how the possibilities and direction to take with regard to distance learning and home learning, and in the future we shall be able to deal with education for children living abroad and children who do not attend school.

For this purpose also, topics in the future will include "The further improvement of the degree of computer literacy of the teaching staff (the understanding and utilisation of information technology)," "the positive participation of parents (homes) (100% participation in CHaTNet)" and "planning to improve the staff who support the IT technology."

Aquatic Insects Living in the School Swimming Pool: Development of the "*Yago-kyu*" (dragonfly larvae saving) *Net Project*

Minister for Education, Culture, Sports, Science and Technology Award

Keio Yochisha Elementary School

Data

Address:
Keio Yochisha Elementary school
Ebisu 2-35-1,
Shibuya-ku,
Tokyo 150-0013
URL: http://rika.yochisha.keio.ac.jp/yagokyu-net/index.htm

Summary

A total of 38 schools and groups nationwide made an investigation of the aquatic insects living in school swimming pools. As a site for these activities, *'Yago-kyu' Net Project* web page was opened. This web page presented a simple way to carry out an investigation and a view of the data, as well as functioning as a place where each organisation could communicate with each other.

As a result of the investigation, it was found that *yagos* (dragonfly larvae) of the *akane* genus were dominating the pool, and *itotombos* (*Zygoptera*) and *yanmas* (*Aeshnidae*), which lay their eggs in plant tissue, were hardly to be seen.

From each school we received reports of activities that consisted of images and texts, in total 295 reports, and we were able to carry out the activities in cooperation with each other.

*This research was carried out with a grant from the 26th Research Implementation Grant (General Research Category) of the Matsushita Audio-Visual Education Foundation.

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1. Aims of the Activity

While experience of nature is currently becoming more important than ever, it is becoming more and more difficult to actually fulfil it in the cities. Especially there has been a gradual reduction in waterside areas where many types of life forms were to be seen, and in cities these have been almost completely lost. However, in school swimming pools countrywide, many types of aquatic insects such as *yagos* (dragonfly larvae) and *gengoros* (dytiscids) may be seen. It is thought that these pools, where many types of marine life-forms can be seen, may adequately function as valuable "waterside space" where children may add to their "waterside experience".

Recently, there have been various educational schemes in various places, which focus on the aquatic life in these sorts of pools. However, most of these have just been sporadic single lessons where *yago* that have been produced in the pool are collected and set free in the school pond, and so on. It could not necessarily be said that enough attempts had been made to use the abundant life in the pools, or to turn them into educational materials, and furthermore almost no surveys have been carried out on a nationwide scale.

There are three distinctive characteristics of school swimming pools, namely (1) they are found widely across the country, (2) their environment is uniformly simple, and (3) the method of upkeep is almost the same everywhere. Accordingly, it is possible to make a general survey of insects across a wide area, to make clear of the geographical distribution of aquatic insects that live in the closed water areas in cities, and to study the emerging period of the *tombos* (*Anisoptera*) during an year. Thus, there must be no more ideal field for study than school swimming pools.

Therefore, we worked with 38 schools and groups nationwide, concentrating on *yagos*. We formed a network and aimed at the exchange and sharing of data and mutual activities. Before the start of the project we opened a web page called *"Yago-kyu" Net* and tried to make it function as a station for the activities concerning the pool life-forms. The URL is as follows:

"Yago-kyu" Net: http://rika.yochisha.keio.ac.jp/yagokyu-net/index.htm

Expected results are as follows:

(1)Finding out the nature of each participating area, and to broaden children's view points

By broadening the area of activities nationwide, and looking down upon the data on pool life from each area (e.g. biological composition, number of zoon, period of eclosion), the children can broaden their view point from just their local area to the natural environment.

(2)Increasing communication with other groups

We can expect a development of a livelier communication with other groups, not only in data exchange, but also in presenting each other with information about know-how on collection and looking after the insects, or exchanging observation reports. Furthermore, because the communication will not be only between specific schools, but a variety of primary and secondary schools and nature protection groups, a wide range of interchange may be expected between these groups.

fig.1 Feeding: the collected yagos were put into containers made of PET bottles. Children decided turns of duty and fed them every day.

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(3)The development to 'Period for Integrated Study'

Recently, when the natural waterside environment with which we can interact is decreasing, we think that the swimming pool can function adequately as a place where children can gain a quasi experience of aquatic environments at hand. Furthermore, they can gain a very real idea of the fact that aquatic life forms and the number of them differ according to different environments, and they can engage in a general mutual exchange of ideas as to how we can return life forms to our immediate environment in the process of the 'Period for Integrated Study'.

(4)Academic curiosity

In the school swimming pools west of the Kansai area, there have been several reports saying that the presence of *tairikuakane* (*Sympetrum depressiusculum*) is the most prominent feature (Matsura et al, 1998). However, at our school (Shibuya-ku, Tokyo), for the last three years we could not find any *tairikuakane*, rather *konoshimetombo* (*Sympetrum baccha matutinum*) have been dominant. We have not been able to gain enough knowledge about the extensive geographical distribution of aquatic insects living in school swimming pools such as *tombos*, and so from now on it is our wish to get a head start in research.

2. Special Features, Methods, Points of Emphasis

(1)Performing a project that is easy to participate in

Since the project involves starting from scratch, and gaining the understanding of a teacher from another school who have never met with, it is necessary to think of a way to go about this. What we always have in mind is the idea of "generalising" in all its aspects. Especially, we have thought about the four points below, and have aimed at making a "*Yago-kyu*" *Net* : an easy project to participate in to use.

- Making it possible to participate with only one computer and one telephone line.

If it is a project where special hardware or a high degree of specialist knowledge is required, or if only schools with a certain type of set-up are able to participate, then the number of schools participating becomes limited, and this goes contrary to the intentions of the national survey.

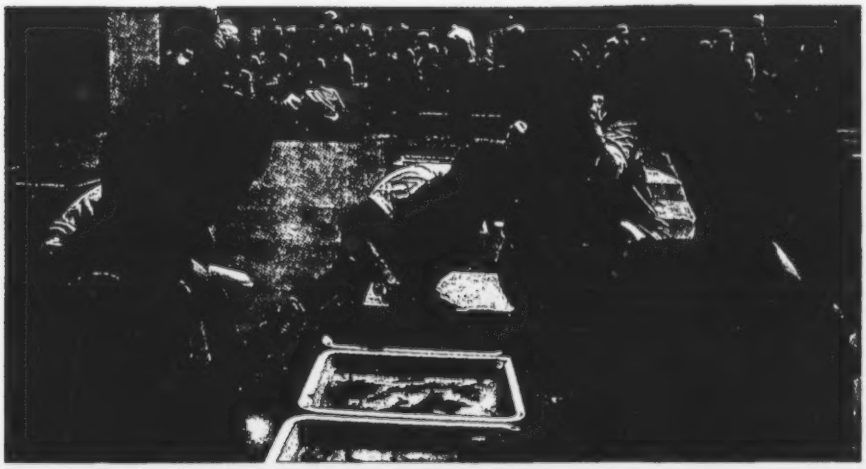

fig.2 *Ginyanma* (*Anax parthenope julius*): 4th graders observing *yagos* of *ginyanma*. The collected yagos were classified and were attributed.

Accordingly, at the present time, we have placed emphasis on the possibility of as many schools as possible participating even without having to make any new outlay. In order that reports can be made on a school-by-school basis without each participating school having to have its own home page, we have prepared a message board with a function of uploading images for each school.

- An easy method of survey.

We decided to classify the *yago* into 3 broad types, without requiring the further identification of the species. The method of classification was written on the *"Yago-kyu" Net* "Method" page. We also prepared a PDF file that can be printed and used just as it is for class use.

- Leaving the matter of the pace of interchange entirely up to the school

After putting the results of the survey up on the web, study exchanges begin, which use these as resources. However, this was not made compulsory, and it took the form that each school participated according to its own stance on the matter.

(2)The recruitment of participating groups

The participating groups were not defined from the initial stage; rather recruitment was carried out by notification on mailing lists and news magazines. Furthermore, we selected some 60 schools that were thought to be particularly

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enthusiastic about information education and environmental education, and mailed them directly about this matter.

At the initial stage it was hard to gather participating groups, and it was feared that the project might come to a standstill. However, then the project was covered in media such as newspapers and magazines, and gradually the number of participating schools began to increase. Eventually, from Sendai, Miyagi Prefecture down to Kanoya City, Kagoshima Prefecture, the total reached 38 schools and/or organisations (as of 27th September 2000).

(3)The setting up of the *"Yago-kyu" mailing list*

Before setting up the web page, in order that the people in charge at the schools and/or organisations that had agreed to participate could participate with each other, we set up a *"Yago-kyu" mailing list* on 14th March 2000, and we used it as a site for various communication and discussion about the activities.

(4)The creation of the *"Yago-kyu" Net* web page

The "Yago-kyu" Net web page, the site for our activities, was opened on 17th April 2000. Below we have listed the contents of the page.

fig.3 Sketching: Aquatic insects collected at different levels were brought back to the classroom; and were sketched and observed their eating habits.

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● The "Method" page

This is a page that explained how to identify and keep the insects that were collected in the school survey.

If we do not clarify the composition of *yago* at each pool, then we will not be able to find out the geographical distribution of the *tombo*. However, it is unrealistic to expect participating groups to identify the yago at species-level when even an academic researcher have difficulty in doing so. Therefore we listed on the page a simple method of classification that everyone from elementary school level upwards could carry out, and based on this we get the groups in each area to carry out the survey. Concretely, we got them to divide the yago into three groups: the *akatombo* (*Sympetrum*)-group, the *shiokaratombo* (*Orthetrum albistylum speciosum*) -group, and the *yanma*-group, and then to send the data to the *"Yago-kyu" Net*. Furthermore, we also prepared an explanation of the way to identify different types of *yago* and things to note on the day of the survey, and prepared PDF-file that could be printed and used as it is in the lesson, and made it possible to download and use these.

● The "State of Activities" page

For each participating school and/or group a special message board (imgboard v1.22 R4) for the exclusive function of pasting images, and made it so that every participating school and/or group was able to report on every aspect of its activities. However, we did not make it at all compulsory to upload these images onto the web, and we respected each group's own position towards the project.

● The "Sent Data" page

This is a form page for the sending of survey data. We made it so that each group could enter the total number of *yago* by type, and also the total number of other aquatic insects, and the geographical features of the surrounding area as well as information about the position of the pool, and could obtain the difference in the conditions of the aquatic insects according to the differences in environment.

● The "Database" page

This is a list of the pool life and the surrounding environment that was gathered from each school.

● "Exchange Forum"

This was prepared as a place where participating children and teachers etc. could freely make comments about the activities. Within the "Exchange Forum," there were a further three rooms divided by function: these were called "Any

Questions?" "Everyone's Room" and "The Teachers'" Room."

fig4. Hanging Over the *Yagos* : 4th graders hanging over the *yagos* to 6th graders. 4th graders collected *yago*, while 6th graders classified and calculated them.

We made the "Any Questions" room a room where people could ask questions directly to researchers via the message board about life forms like plankton, midges, and *yago*. We invited the following three people to give answers: Associate Professor Shirotaro Urabe from the Kyoto University Ecological Research Centre (plankton), Research Assistant Sukeharu Nakasato from the Ibaraki University Aquatic Environment Studies Education Centre (midges) and Mr. Katsusuke Niimura who is a retired teacher from an Osaka City junior high school (*yago*).

We made "Everyone's Room" into a cyber-classroom: not communication between selected schools and grades but rather a place where any child and teachers from each participating school could communicate in the same room.

In the "Teachers' Room," we made public the *"Yago-kyu" mailing list* made up of the people in charge of the project at each participating school and group, and made it so that even for external people it was possible to understand the changes in the activities. By doing this, people who were not participating in the project were also able to see the mailing list, and also were able to make comments.

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3. Contents of the Activities

(1)The survey of life forms in the pool

In order to create the method of carrying out the investigation in the school and also to create a template of images and data about the life forms, we firstly carried out an survey at Keio Yochisha Elementary School on the 1st of May, 2000.

As a preparatory survey, the 6th grade students collected life forms in the pool at different levels, to gain an idea of which life forms were present at different parts of the pools. Furthermore, we took the life forms collected, including *yago*, back to the classroom, carried out identification of their species and observed their eating habits and methods of swimming, and deepened our understanding of the aquatic insects that had made their home in our pool. After these activities, we carried out tactics to help the *yago* (a quantitative survey). The tactics to help the *yago* were carried out by 4th grader who actually entered the pool, from

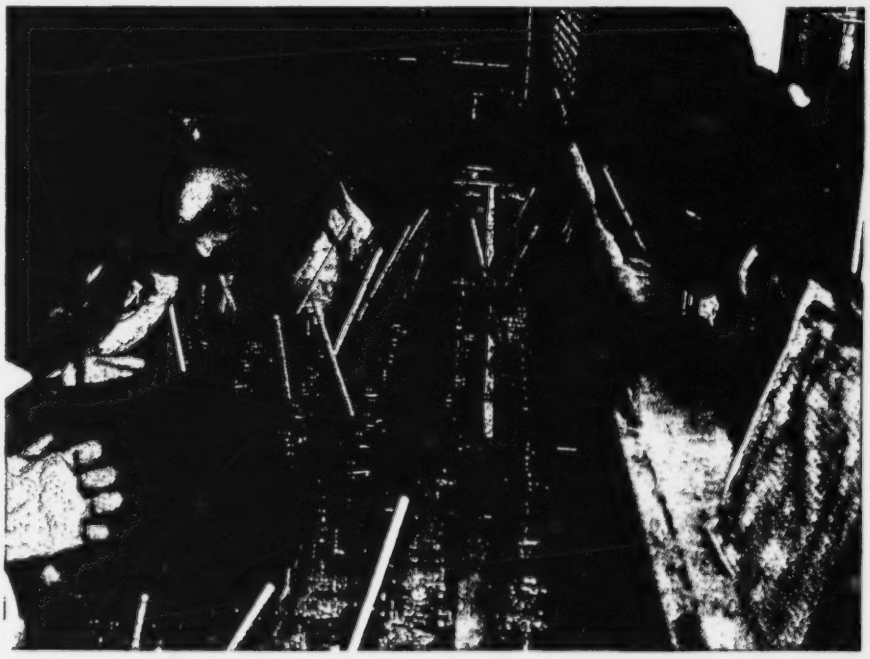

fig.5 Observing Eclosion: 4th graders observing eclosion with bated breath. As a *ginyanma* (*Anax parthenope julius*) started to grow their wings during a class, we decided to look upon it.

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which the water had been taken out, and then the job of classifying and calculating on the poolside which was carried out by 6th graders and 2nd graders together.

We recorded the above activities with a digital camera, and uploaded it onto the "State of Activities" page of our school. Furthermore, the sixth graders sent the assembled data from the "Sent Data" page to the *"Yago-kyu" Net*, and they reported both of these to the *"Yago-kyu" mailing list*.

Also in the case of the other participating schools and/or groups, although the ages of the children who carried out the activities was different, they carried out the survey according to almost the same procedure as above, and they reported their results to the "State of Activities" page and the *"Yago-kyu" mailing list* etc.

(2)Joint activities in each area

The collected *yago* were put into containers such as PET bottles, and were kept and made to emerge from pupae at each school. At some schools and/or groups, the grown insects were identified by species, and the data about the composition of species was sent to *"Yago-kyu" Net*. In this way, the data about the life forms gathered from each school was put together in the "Database" page, and each school was able to use this data freely as teaching materials.

Queries about the pool life forms that were raised through carrying out the activities were answered by the three specialists in the "Any Questions?" room.

Children and teachers were all able to write freely their hopes, thoughts, queries and feelings about the project in the "Everyone's Room."

In order to carry out the above activities, that utilised computers, at our school the children were able to view freely the contents of the site in the Information Classroom, and it was same as for to see the activities of other schools and/or groups. Furthermore, for "Everyone's Room" and the "Any Questions?" room, the principles of "netiquette" (a type of new manner of network citizens) were explained clearly beforehand. In addition, the contents of the comments were read by the teacher in charge and were checked for problems in the contents and expression before being uploaded onto the web.

4. Results of the Activities

Data of the *"Yago-kyu" Project* was collected from 38 school swimming pools ranging from Miyagi Prefecture to Kagoshima Prefecture, and we were able to

fig6. Identifying: 6th graders classifying and calculating the *yagos* collected by 4th graders. The number of zoon was written down on the tally card and was made up afterwards.

survey the state of *tombo* living in swimming pools on a scale that had never previously been carried out. In consequence, as a nationwide tendency, in pools that had no waterside vegetation, insects belonging to the *akane* genus such as *akatombo*, which are exophytic oviposition were most common, and *shiokaratombo* were second to this. It was discovered that the *itotombo* and *yanma* that lay their eggs in plant systems were hardly to be found, except in pools where plants had been thrown on purpose. According to the reports of schools and/or organizations that identified the insects on a species level, the data suggested the possibility that, from the Kanto region to the Chubu region *konoshimetombo* was dominant, and from Kansai and west of there, *tairikuakane* was dominant. There had previously been reports that the *konoshimetombo* was dominant in the Kansai region, but until now there had hardly any research in the Chubu and Kanto regions, and the dominance of *konoshimetombo* in these areas was one point that was first suggested by this research. However, only six pools provided data about the composition different species, and therefore it is thought that more research is necessary in future.

Furthermore, in pools that purposely inserted plants into the pool last year, many examples of *ginyanma* (*Anax parthenope julius*), which lays its eggs in plant systems, were found in great numbers, and at the same time the number of other species was high compared to the number found at other schools. Accordingly, it is clear that, by simply changing the environment by adding plants to the pool, both the quantity and quality of pool life forms will increase.

There was a total of 295 reports with images uploaded on the "State of the Activities" page, and on average each school and group had contributed 8. Reports on the preliminary survey, the actual tactics for helping *yago*, and information on the hatching of the *yago* were all gathered. Amongst these, there was a school that uploaded a moving image of a *yago* preying on an earthworm, and there were many different types of reports on various aspects of their activities from each school. Even the schools that did not upload reports reported their survey data on the *"Yago-kyu" mailing list* and in this way were able to share the contents of the activities in some way.

fig.7 Preparatory Survey: as a preparatory survey, we collected life forms in the pool at different levels: the surface, the middle, and the bottom of the pool investigating what kind of aquatic insects are living it. As we collected the insects without emptying the water, we used a long-handled net from the poolside.

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The total number of messages on the "Any Questions?" message board reached 105, and information about the pool life was exchanged between the children from each school and the 3 web specialists. The children at our school sent a "thank you" mail with their photograph to the specialists who had been kind enough to answer their questions. For the children, the most important thing was the "real" information. Researchers at the forefront of their field answered the questions based on experience and knowledge gained from long years of research in their field, and for the children it was an extremely good chance to come into contact with and study this real information.

The number of messages in "Everyone's room" reached 71. Most of these were thoughts from the children who had carried out the research, but there were also messages from and directed at adults about such matters as the best way to use a single-lens reflex camera for close-up photography, and reports from parents and guardians about how to look after the insects. The contributors spanned the generations, and came to cover a broad range of topics.

5. Prospects (Future Topics)

Swimming pools exist in every part of Japan, and are the aquatic environment that is most near at hand. In recent years, various surveys that use the pool as a field for study have begun to be carried out at various schools in different parts of the country, and the basis for a survey into the state of *yago* nationwide has already been laid down. However, in order to carry these surveys out, we need to generalise the methods of making the survey and classifying the collected insects, and furthermore it is necessary to offer these methods to schools and/or groups across the country. In addition, it is necessary to provide a space where the collected data may be seen at any time and in any place. In order to fulfil the above conditions for our research, we set up the *"Yago-kyu" Net* and because the project does not stop at simply being a survey of pool life nationwide, but also allows the creation of a space for various types of exchange between the contributing schools and groups, we think that it was a very meaningful project.

Furthermore, there have been several schools which did not participate in the project, but which found out and interested in the pool life survey, and actually carried it out and reported the results to us. In this background, it is predicted that there must be many of these sorts of schools. In recent years, with decreasing chances year by year to experience the waterside environment close at

hand, the role of this project, which has spread the idea of the school swimming pool as a near at hand aquatic environment, will certainly not be a small one.

In this project we made a clear division of media according to function between the *"Yago-kyu" Net*, which is a place for reporting of activities and interchange, and the *"Yago-kyu" Mailing List*, which was used for everyday communication of items between the people running the schemes. This dual system was of great benefit in the actual running of the scheme, and by doing this is was possible for the scheme to progress smoothly.

With regard to the contents of the *"Yago-kyu" Net*, by providing an image database for each participating organisation on the "State of Activities" page, it became possible for schools without their own web page to exchange information with each other. In some cases even when the participating school did have its own web page, it could take more that two weeks for the server to renew the page. For schools in this sort of environment, the fact that they were able to see an idea for the future where it was possible to use a message board that changed almost in real time, has been one of the benefits of the system.

From 2002, education based on new study guidelines will begin at elementary and lower secondary schools nationwide. The survey of the life forms in swimming pools, as well as the development of a nationwide-scale activity using the Internet, is something that it should be fully possible to develop in the "Period for Integrated Study" lessons that will be provided under the new study guidelines.

One future topic is the increase in the speed of updating the page. Because the updates are all carried out at our school (Keio Yochisha Elementary School), there have been times when updating has been delayed because of school events, etc. From now on, we have recognised the necessity of spreading the work of updating among the participating schools and groups, and encouraging them to take a more central role.

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